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"Nutritional Problems—Old and New"

> *"I find the great thing in this world is not so much where we stand as in what direction we are moving."*
>
> —Oliver Wendell Holmes, MD

Requirements

Good health demands that individual food needs be regularly supplied in their entirety. This seems to be the missing link in complete nutrition, as scientists find that only a few of our food proteins, of either animal or vegetable source, contain the exact combination of amino acids required by the human body. However, since we are mammals, the chemical structure of animals is the nearest to that of our own bodies. Although vegetable sources are considered as second class proteins, some animals live entirely on plant foods. We relish the muscle meat of these so-called "hay burners," their steaks, roasts, hamburgers, and bologna, which, according to our modern connoisseurs, can be a first-rate source of protein.

Some scientists and most vegetarians (vegans) dispute this rating and cite the fact that, for thousands and thousands of years, when carnivorous animals made a kill they ate the glandular organs first and left most of the muscle meat for scavengers. A strict vegetarian consuming no animal products and having an ample supply of lentils and nuts will be reasonably nutritionally satisfied, but it has been demonstrated in both animal and human experiments that better growth and health may be observed by supplying some butter, eggs, milk, and organ meats in addition to fruit, vegetables, and nuts. Beans and peas are usually classed as lentils. It is surprising to note that lima beans contain 20.8 g of protein and a comparable amount of sirloin steak only 17.3 g. Americans generally are meat and potato consumers; however, a salad of either fruits or vegetables, or a side dish of sprouts or nuts (untreated) serves as insurance for a complete protein meal.

Most nutritionists advise that the combining of complementary amino acids must take place at the same meal, as even the delay of an hour or two may deprive the body of a complete protein for that meal. Others say it should be on a daily basis, as the body uses amino acids all the time. The essential amino acids are needed as building blocks in formation of complicated proteins that form not only the body's structural framework but also the gears and levers of its machinery.

Proteins and Life

Proteins make up the vital part of that essential protoplasmic jelly-like material of the living cells of animals and plants called cytoplasm. It is now regarded as the only form of matter in which the phenomenon of life is manifested. In fact, the word protein means "to take first place" or "of first rank" according to Mulder, an early investigator who coined the word and determined there was no life without proteins. Apparently this is a truth that cannot be refuted. A protein deficiency has been known to cause lingering illnesses or disease, and if not corrected may result in death. In fact, the necessity of having proteins in the diet has been known for years, but a knowledge of complete proteins and the loss of essential amino acids by cooking is a more recent conclusion.

Historically, in his *Tale of Two Cities* Dickens describes an episode in the French Revolution of 1789. He reveals that an attempt was made to assuage an acute food shortage by feeding the people with albuminoid (a true protein), which forms the basis of epidermal tissues such as hair, horn, hoofs and feathers. Boiling caused the loss of the essential amino acids lysine and tryptophan. Being an incomplete protein, the resulting gelatin filled many stomachs, but used alone it failed to stop death from starvation. Our present food source of gelatin is processed in a similar manner but now various flavors and dyes are added to make it more appealing. The addition of some fruit pectin also makes it more attractive. But it continues to be an incomplete protein and used alone as a source of protein will fail to produce growth, health, and/or lengthen life.

> *"Every man desires to live long, but no man would be old."*
>
> —Jonathan Swift

A Compete Protein

To live long and to have a healthy old age it is necessary to supply our billions of body cells, "where good health may begin or fail," with a combination of essential nutrients—namely, proteins, minerals, vitamins, and the unprocessed essential fatty acids—in order to form the enzymes necessary to maintain our self-repair mechanism. Scientists have demonstrated, in various tests, that protein is very much needed in our self-repair system. They have found that insufficient protein causes tiredness and susceptibility to infection and usually results in slow healing. So, ingestion of at least two protein foods at each meal, to supply our body with the required complete protein, may be absolutely vital to our dietary. Eating some fresh raw foods every day at meal time could furnish some of the necessary vital factors for complete nutrition.

A complete protein contains the ten essential amino acids: arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. When we supply these essential ones the body is able to manufacture many others that are needed for the myriad functions they perform. Eggs, cheese, certified raw milk, and yeast are considered complete protein foods. An egg is a complete protein food of high biological value, in that it contains all the essential amino acids in balanced proportions. In fact, the amino acid composition of whole fertile hen's eggs is used as the standard of comparison for other proteins.

Although the *quantity* of protein contained is small when compared to the same weight of soya beans, chickpeas, or peanuts, the biologic value is much higher because all of these plant foods are low in methionine. Green leafy vegetable proteins are generally well-balanced with respect to all amino acids except methionine. The fact that this loss must be made up with other proteins that contain methionine is one of the drawbacks of a strict vegetarian diet. But, just as the amino acids are needed in balance, there is also a limit of tolerance for most amino acids.

Experimentally, this limit was found to depend on the level of protein in the diet, the levels of pyridoxine (B6) and niacinamide (B3), as well as the age of the animal. An excess of one essential amino acid has been found to depress the action of another and is classified as an amino acid antagonism. It differs from an imbalance in that an imbalance is prevented by a supplement of the most limiting amino acid, whereas an antagonism is not. The investigators also found that the distinction between antagonism and toxicity is that the former is alleviated by structurally similar amino acids, whereas the latter is not. Apparently, ingesting more than one complete protein at a meal is unnecessary, as no extra benefit will accrue and the possible excess of an amino acid may cause an antagonism, an imbalance, or even toxicity. Also, in some individuals the digestive system may be overtaxed.

The Biological Value of Protein

As a component in every cell in our body it is doubtful the true value of protein will ever be determined. It is doubtful, too, that its importance in our daily life can ever be overestimated

For instance, when we think of red blood cells we automatically equate their value with life or death. Protein is not only the chief component in the red blood cells but also in the white blood cells and antibodies (globulins), which act in the defense system of the body. As a principal component of enzymes, protein is very important to the digestive system and in the metabolic process of repair and maintenance. It is also an important component of the hormones, which are sometimes called the chemical messengers of the endocrine systems.

Too often forgotten is its presence as the chief component of albumin, a protein essentially formed in the liver. Albumin in the blood functions in the regulation of the osmotic pressure of that liquid. The control of osmotic pressure in turn affects the water balance in the body and consequently excretion of waste products by the excretory organs. Older practitioners of orthodox medicine often blamed a misfunction of this process on a "lazy liver." However, more often it may be caused by an insufficient supply of complete protein for the liver to make the albumin which is so necessary to carry out this detoxifying process. Should waste matter remain in the tissues any length of time, swelling occurs in the ankles and wrists and causes a puffiness under the eyes. In time the whole body becomes waterlogged. The party so afflicted may presume this is fat and cut down on the food intake, including protein. But this is the wrong approach, as is also the prescribing of "water pills." The sensible approach is to support the liver in its functions and by supplying the necessary protein to reestablish the normal amount of

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Guest Blog Post Submission Form albumin put out by the liver in this very important detoxifying process.

Another major type of protein present in the plasma is the globulins, which perform a number of enzymatic functions in the plasma itself. More important than this, they are principally responsible for both the natural and acquired immunity that a person has against invading organisms. It is noteworthy that some 50 percent or more of the globulins are formed in the liver, the remainder being formed in the lymphoid tissues and other cells of the reticuloendothelial system, mainly the gamma globulins that constitute the antibodies.

Fibrinogen is yet a third type of protein in the plasma, also formed essentially by the liver. It polymerizes into long fibrin threads during blood coagulation, thereby forming blood clots that help to repair leaks in the circulatory system.

Space simply does not permit a full discussion of the subject, but let the reader reflect on yet another grouping of highly complex proteins, the fibrous proteins. Major types are 1) collagens, which are the basic structural proteins of connective tissue, tendons, cartilage, and bone; 2) elastins, which are the elastic fibers of tendons, arteries, and connective tissue; 3) keratins, which are the structural proteins of hair and nails; and 4) actins and myosin, the contractile proteins of muscle. In addition to the globular and fibrous proteins, many proteins are combined as conjugated proteins with nonprotein substances. These include the nucleoproteins, combinations of simple proteins and nucleic acid. The list is almost endless: lipoproteins, with lipid materials; chromoproteins (such as hemoglobin and cytochromes), which contain coloring agents; phosphoproteins, which contain phosphorus; and metalloproteins, which contain magnesium, copper, iron, zinc, or other metallic ions and which constitute many of the enzymes.

Some Missing Essentials

From all the above, it is obvious we need a regular supply of essential amino acids. As stated previously, people on a strict vegetarian diet could incur a shortage of the amino acid methionine. It is naturally found in animal products but not in the high sources of protein in vegetable products. It is essential for normal growth, as a source of methyl groups for the assimilation of choline and creatine. A methionine-deficient diet will regularly produce fatty livers in experimental animals, leading to cirrhosis.

However, we find the two amino acids that are critical and at risk for just about everyone are lysine and tryptophan. They are very heat labile and their loss can occur through the heat of cooking, canning, blanching, drying, pasteurization, and hydrogenation. This loss seems to be magnified in the presence of sugar. Heat of pasteurization in milk causes the loss of these two very essential amino acids. That is why some nutritionists suggest eating additional protein food at the same meal in order to provide the lysine and tryptophan necessary for a complete protein.

Lysine – It is found as a cellular constituent in both animals and plants. Lysine is said to be of such particular importance in nutrition because of its "dynamic effect." Even in one part per million it has a very definite effect in stimulating the metabolic rate in the growth of man. Males need over three quarters of a gram daily. Older persons may require twice this amount. Years ago this amount was easily procurable from unheated milk products. Animal tests by a research team at Pennsylvania State University have determined that the modern-day heat processing of commercial milk powders destroys the lysine, necessary for the normal mineralization of teeth and bones. It was found that the heat treatment caused an approximate loss of about 50 percent of lysine, in the powdered milk. When fed to rats for a seven-week period, the lysine-deficient milk powder caused 50 percent more cavities and 25 percent more cavity-ridden teeth than the control rats that had been fed unheated skimmed milk. It was also found that the severity of the cavities in the lysine-deficient group was greater. Casein, the protein found in milk, is a good animal source of lysine, along with beef. Wheat germ, green pea, and soybean proteins are rich in lysine.

Tryptophan – This substance is widely distributed in animal and some plant proteins. We note again, heat causes the destruction of this critical amino acid. As a product of tryptic digestion it is a precursor of niacinamide. A deficiency may contribute to periodontal problems and arthritis through the failure of the protein matrix of bone to form.

The minimum daily requirement has been tentatively estimated as one quarter of a gram. In animal tests less than this amount of tryptophan contributed to systemic reactions such as cataracts, corneal vascularization, alopecia, hypochromic anemia, tooth enamel defects, testicular degeneration in the male, and sterility in the female. Rich sources are nuts and seeds such as sunflower seeds, peanuts, cashew nuts, and sesame seeds.

Phenylalanine – This amino acid has been found necessary to counteract the effects of lead in our environment. Together with tyrosine, it is a primary precursor of the catecholamines, including epinephrine, norepinephrine, and L-dopa. It is postulated that lead from our environment may cause a mineral unbalance by removing the copper and zinc from our brain. Investigators have found that a deficiency of L-dopa causes both the brain and sympathetic system to malfunction. When researchers chelated copper and zinc with L-dopa as the transport

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Why Phyllis Quinn's Slow Cook agent, more of these minerals were carried to the brain than if ingested separately. Then too, according to the scientists, L-dopa is an amino acid that the brain apparently requires to function normally. Why? Because copper "activates" cytochrome oxidase, in mitochondrial respiration, and oxygen is an absolute essential in brain function. It has been estimated that about 20 percent of the oxygen that we breathe into our lungs is needed by the brain and that any inhibition of cytochrome oxidase activity, through a copper deficiency or in some other manner, causes the protective nerve covering (myelin sheath) to break down and to produce faulty nerve impulses.

Minerals

Researchers at Cincinnati University have found out that when test animals were exposed to heavy metals such as cadmium, lead, and mercury that the copper, iron, and zinc were actually displaced. Removal of these essential minerals from the brain has resulted in another malfunction, by inhibiting copper, iron, magnesium, and zinc from activating their many enzymes in the brain. Naturally the question arises of how do we prevent lead damage to the brain?

Only recently, investigators at the University of North Carolina have determined that a high calcium diet tended to prevent lead damage, while a low calcium diet allowed the full toxic effects to occur. Physicians have noted a reduction in lead levels of smaller children who have been taking a calcium-magnesium supplement regularly. They have also noticed that, in addition to affecting the brain and central nervous system, lead can cause severe kidney damage, either through ingestion or inhalation. Apparently small children are more prone to lead poisoning than adults because they are nearer the level of car exhaust fumes and no doubt inhale more of the lead-containing gases. A recent press release advises that exposure to ethylene dibromide (EDB), the gasoline additive antiknock compound known as ethyl, used in premium gasolines and as a pesticide, has only recently been found to be the most potent cancer-causing substance ever discovered in the animal testing program of the National Cancer Institute.

We have previously reported that a zinc deficiency tends to cause difficulties in learning or remembering. Recall also the importance of zinc for proper healing and its role in digestion and in hormones.

The final report of a recent study advised that close to 70 percent of the population of the world is presently suffering from brain damage conditions due to malnutrition. This surely makes one wonder about the brain power (common sense) of many of the remaining 30 percent, who are making fortunes selling malnutrition and degrading not only the health of our nation but also world health.

Induced Malnutrition Discussion

> *"Any poison, no matter how little, added to our food or drink is too much."*
>
> —Dr. Harvey W. Wiley

We wonder how many of us would presently be on earth if our great-grandparents would have had to exist on the many processed so-called food offerings that now abound. Several nutritionists have concluded that "today's refined foods do not provide enough nutrients to allow modern men and women to function at their optimal levels." Most people have come to accept less than optimal functioning because their 1945 model doctor nutritionists have advised them: "Choose from the four basic food groups, and supplements aren't necessary."

But modern clinicians who have studied nutrition are aware of the loss of many nutrients in today's food, and suggest dietary changes and supplementation on an individual basis, where necessary. Because of nutrient losses in processing and/or the wrong fertilization method in growing, and because of poor food choices in the daily dietary, approximately one half of our population, both rich and poor alike, are said to be malnourished. Our great-grandmother didn't have to worry about nutrients in her foodstuffs because the proteins, vitamins, minerals, and fiber were all naturally present. Her only concern apparently was a loss through overcooking. Now the modern nutritionist or meal planner must be concerned with all of these losses, as well as the elimination of harmful food additives, chemicals and dyes, which can and have resulted in food allergies, hyperkinesia, hormonal unbalance, and cancer.

Perhaps we should have a legal grandmother's clause to protect our foodstuffs just as the chemical and drug industries have a "grandfather clause" to ensure a legal loophole for their continued benefit.

For instance, chemicals put into our food seem to have more lives than the proverbial cat. For several years evidence has been accumulating in regard to several of them being a cause of cancer. The topic of nitrite contamination has been bandied about for years. Nutritionists were right in their continual warning that nitrates and nitrites were a constant hazard as a cancer risk, and now that it has been proved beyond a doubt our government agencies have finally admitted it.

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But, as with other cancer-producing food contaminants, a delaying action to ban is in the making. A precedent has been set with diethylstilbestrol (DES), a hormone in animal food, several red dyes and saccharin, also suspect carcinogens, to delay the ban. As in previous like circumstances, industry spokesmen will ridicule facts and ask time for further "study." By traditionally favoring industry and even though being embarrassed again, the concerned agencies probably will permit delay of the ban, to allow industry to find a substitute for nitrites, because of "the threat of botulism." The head of the Food and Drug Administration recently commented: "Despite evidence that nitrites cause cancer it would be irresponsible to immediately ban them from foods. An outright ban on nitrites would cause more problems than it is going to cure." Apparently, Dr. Kennedy has inherited an overripe situation, in which the public has been fed cancer-causing nitrosamines for quite a few years

Continued Risk

From *Nature* magazine we learn that one of the nation's favorite luncheons of coffee and a sandwich made from nitrite-treated bacon, bologna, frankfurters, ham, or corn-beef contain other factors that together cause the formation of nitrosamines in the body. More recent tests determined that the nitrites alone could cause cancer. Even so, we can presume that only a partial ban will be instituted, as this is a double-barreled industrial situation involving millions of pounds of a toxic, previously untested chemical, and doubtless involving billions of dollars' worth of treated meat products in processing plants and storage warehouses. For supporting these so-called consumer protective organizations, the taxpaying public will continue to receive a bonus of cancer-causing substances in their food. But the protectors, in so many instances, become eligible for a fancy salaried job with industry when they cease functioning as so-called protectors. The name of this to-and-fro game is often designated as "musical chairs." And again, we the consumers are left holding the bag. According to commercial food experts, we can choose between cancer and/or botulism, or we can abstain from consuming luncheon meats entirely. Apparently, abstaining is a healthy practice.

Dr. James Enstrom, a researcher at the UCLA school of public health, advises that the diet and lifestyle of the Church of Latter-Day Saints, or Mormons, probably accounts for the low cancer mortality rate among its members. "Their religion recommends a well-balanced diet, particularly the use of wholesome grains and fruits and moderation in the eating of meat." Utah has the lowest cancer rate in this country, and Mormons make up 73 percent of Utah's population. In the January 1975 copy of *Caveat Emptor*, we are advised that among religious groups, only the Seventh-Day Adventists with their strict rules on diet and conduct rank lower in cancer incidence. Perhaps, as Oliver Wendell Holmes suggested at the beginning of this article, it might be advisable for all of us to better regulate our diet by becoming more abstemious, so we will be moving in the direction of better health.

Presently, we have become a pawn of the processed food industry and their substitute convenience products, sold as food, together with a tremendous assortment of chemicals and dyes about which too little is known. Additives safe listed for years have now become known carcinogens. Health is being bypassed and the profit motive continues to ascend. Nearly a century ago John Ruskin said: "There is nothing in this world that some man cannot make a little worse and sell a little cheaper, and people who consider price only are that man's lawful prey."

This question often arises in nutritional discussions. Why is canned dog food often dyed red when it is a well-known fact that dogs are color blind and are attracted to food by the scent? Garbage men reportedly have found empty dog food cans behind homes for the aged, as well as behind the homes of some poor elderly people who cannot afford to keep a dog but apparently must supply their own protein needs. The irony of this situation is that younger people are using their government supplied "food stamps" for trivialities such as ersatz foods, cola drinks, soda pop, etc., instead of for health-producing staple food items. Apparently the elderly people are trying to conserve health while many younger people are ignoring health to satisfy their sugarholic tendencies on the way to becoming another Medicare patient. In the process they have imbibed many food additives, in all probability to combine with other chemicals or drugs. Scientists find the harm caused by such chemical combinations hard to detect and the effects frequently may not be detected for years.

Dr. Samuel S. Epstein, a scientist at the Children's Cancer Research Foundation in Boston, has said: "There are probably many food additives, drugs and environmental agents which create harmful byproducts during their metabolism in the human body although alone they are 'generally regarded as safe' (GRAS)." However, safety is never mentioned in the enticing industrial advertising that seems to be the key to the processed food business success and to consumer brainwashing.

More and more people are becoming disgusted with the word "strong" in advertising over-the-counter drugs, of the word "light" in advertising beer and cigarettes, of the word "polyunsaturated" in advertising oils and cooking fats, and in dry cereal advertising expressions such as *natural ingredients, natural flavor, natural sweeteners*, and *good tasting*. In most instances these cereals also contain hydrogenated vegetable oil or coconut oil (both saturated) together, with such sweetening agents as granulated sugar, brown sugar, corn syrup, and occasionally honey to greatly increase the calorie content over the natural whole grain cereals. Suspicious carcinogens as chemical antioxidants BHA and BHT are too often used to replace the natural vitamin E antioxidant component of the whole grain, which has been lost in processing. The commercial claims for "natural" products have become so widespread and so potentially misleading, in the opinion of some nutritional observers, that the Federal Trade Commission (FTC) staff has proposed restrictions on the word "natural." Under this plan the FTC would require that a product described as "natural" be only minimally processed and have no chemical additives. The irony of this situation is that over fifty years of better individual health may have gone down the drain through the favoring of selfish interests.

A well-kept secret is the fact that Dr. Harvey Wiley, the first commissioner of what is now the FDA, lost his job because he expressed this same opinion. He met his Waterloo by protesting the commercial designation of corn syrup as a natural product, when he found it to be a chemical formation made by treating corn starch with sulfuric acid

Apparently we have become chemically encircled, but as Euripides said so many years ago: "Chance fights ever on the side of the prudent."

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Selene River Press is a publishing company specializing in holistic nutrition education. Our philosophy is rooted in the work of Dr. Royal Lee, who showed that vitamin deficiencies, due to processed foods, are responsible for most degenerative disease. From organic farming to food-based vitamins, from raw milk to fermented foods, Dr. Lee set the course for the field of whole food nutrition.

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